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KEY WORDS

Social capital; Social networks; Self-rated health; Social class; Tie strength

1. INTRODUCTION

During the last two decades, health researchers have devoted much attention to social capital. Two schools of social capital can be distinguished: collective and individual social capital (Ferlander, 2007). On the one hand, social capital concerns elements at the collective level of communities, workplaces or neighborhoods (Fukuyama, 1995; Putnam, 2000). On the other, social capital refers to resources at the individual level (Bourdieu, 1986; Portes, 1998; Lin, 2001). Most health studies stressed collective definitions of social capital at the expense of individual perspectives on social capital (Moore et al., 2005). Moreover, within the individual social capital literature, most studies focused on individual trust and participation in formal associations, and less on resources embedded in social networks. These social network resources are often conceptualized as 'network social capital' (Bourdieu, 1986; Portes, 1998; Song and Lin, 2009).

Recently, more attention has been devoted to the effects of network social capital on health. Research has found that people with more social network resources are more likely to have a better self-rated health (Song and Lin, 2009; Carpiano and Hystad, 2011; Moore et al., 2011) and mental health (Acock and Hurlbert, 1993; Webber and Huxley, 2007; Song and Lin, 2009; Haines et al., 2011) and a lower probability of having overweight or obesity (Moore et al., 2009).

Despite this increasing evidence of associations between network social capital and health, it is less clear through which mechanisms network social capital is affecting health. Although recent studies demonstrated the impact of the social network structure on health (Smith and Christakis, 2008), research on how network social capital is linked with health is scarce.

It has been argued that the association between network social capital and health is mediated through social support (Berkman and Glass, 2000). Just like network social capital, social support is provided by network members and is positively associated with health (House et al., 1998; Lin and Ensel, 1989; Ensel and Lin, 1991; Thoits, 1995). In addition, social support has been shown to buffer the negative effects of stressors on health by diminishing stress-induced psychological distress and physiological arousal (Lin and Ensel, 1989; Pearlin, 1989; Ensel and Lin, 1991; Thoits, 1995). However, because network social capital is closely related to social support, several authors have questioned the validity of network social capital and of individual social capital in general (McKenzie et al., 2002; Kawachi et al., 2004). They state that network social capital theory is simply re-labeling terminology or "pouring old wine into new bottles" (Kawachi et al., 2004, p. 683) and that the contribution of the concept of social capital has to be found at the collective level.

Nonetheless, Song and Lin (2009) and Haines and her colleagues (2011) found negative associations between network social capital and having depressive symptoms beyond the effect of social support. There seem to be several alternative pathways through which network social capital could affect health beyond social support (Berkman and Glass, 2000; Kawachi and Berkman, 2001). Firstly, network social capital may contribute to a sense of purpose, belonging and social attachment, which enhance health outcomes (Berkman and Glass, 2000; Kawachi and Berkman, 2001). Carpiano and Hystad (2011) already found that network social capital is positively associated with a sense of belonging. Secondly, network social capital may affect health through providing people access to job opportunities, decent housing, high-quality health care and other instrumental resources (Berkman and Glass, 2000; Song and Lin,

2009). Haines and her colleagues (2011) suggested that better access to instrumental resources is responsible for the negative association between the average educational level of network members and reporting depressive symptoms. Thirdly, network members may affect someone's health status by influencing health behaviors (e.g. physical activity and alcohol and tobacco consumption). (Berkman and Glass, 2000; Kawachi and Berkman, 2001; McNeill et al., 2006). Many studies found that network members' social control is positively related to health-enhancing behavior and negatively associated with health-compromising behavior (Lewis and Rook, 1999; Tucker and Mueller, 2000). Because of these alternative mechanisms, there should be an effect of network social capital on health beyond social support.

In sum, we hypothesize that there is an association between network social capital and self-rated health (hypothesis 1). Moreover, we expect that the association between network social capital and self-rated health is partly mediated through social support (hypothesis 2). However, because of the aforementioned three alternative mechanisms, we expect that there remains a positive association between network social capital and self-rated health, beyond the influence of social support (hypothesis 3).

To distinguish between network social capital and social support, it is important to use instruments that are not ambiguous. The studies of Song and Lin (2009) and Haines and her colleagues (2011) used the name generator to measure social support. This instrument lists the names of a few network members by asking questions about actual social support interactions during a specific timeframe before the interview (e.g. With who did you discuss important matters?). Subsequently, they ask about some characteristics of these generated names (e.g. average intimacy). However, using name generators to measure social support has three limitations. Firstly, some studies suggest that perceived social support has a greater impact on health than received social support (Wethington and Kessler, 1986). Therefore, effects of social support could be underestimated. Secondly, name generators are frequently used to measure network social capital (Van der Gaag, 2005) and are, consequently, less than ideal to disentangle effects of

network social capital and social support. Thirdly, name generators are biased towards strong ties (Lin, 2001; Van der Gaag, 2005). This study assesses perceived social support with the well-established social support-scale of Sherbourne and Stewart (1991) and network social capital with the position generator. Position generators ask people about the occupational positions of their network members and consider these positions as good indicators of resources embedded in the social network (Van der Gaag, 2005; Lin, 2001). This instrument has a long tradition in measuring social capital (Van der Gaag, 2005; Lin, 2001) and has already been used to measure network social capital in previous health studies (Moore et al., 2009; Song and Lin, 2009; Carpiano and Hystad, 2011; Moore et al., 2011).

Research has shown that especially social support from strong ties is beneficial for health (Thoits, 1995). Strong ties concern intimate, frequently interacting, multiplex relationships, such as close friends or immediate family. Weak ties are characterized by low intimacy and infrequent interaction, such as acquaintances. Therefore, the second aim is to distinguish between network social capital that emerges from strong ties and weak ties. There are two opposing views on the influence of the tie strength on the functionality of network social capital. On the one hand, weak ties would be better because they reach people from different social positions and thus access to a more diverse range of social network resources (Granovetter, 1973). On the other, strong ties would be better because they are more motivated to actually help a person, especially when the requested resources are scarce and valuable (Lin et al., 1981). Given these two opposing views, we test two contradicting hypotheses. Hypothesis 4a states that health is more strongly associated with network social capital from weak ties than from strong ties, whereas hypothesis 4b states that health is more strongly associated with network social capital from strong ties than from weak ties.

2. METHODS

2.1. Data and sample

We analyze data from the survey 'Stigma in a Global Context - Belgian Mental Health Study'. This survey is embedded in a global research project, led by B. Pescosolido from Indiana University and consists of a representative sample of the non-institutionalized Belgian population (18+). Our target population is defined with the Belgian National Register, using a multistage cluster sampling design. In stage 1, municipalities were weighted according to their number of inhabitants and 140 of them were selected, including the possibility of being selected more than once. In stage 2, 15 respondents were selected subsequently within each municipality, which resulted in a target sample of 2100 people. Between October 2009 and January 2010, all selected individuals were approached for a computer assisted personal interview. In total, 1,166 persons were interviewed. Following the AAPOR guidelines, the response rate amounts to 56.1% (AAPOR Response Rate 1) and the cooperation rate is 67.7% (AAPOR Cooperation Rate 3).

Afterwards, these respondents were asked to fill in a drop-off questionnaire. The drop-off questionnaire provides insight into the subjective health status and the amount of social support and social capital one has access to. Next to this, feelings of mastery and self-esteem, life satisfaction, depressive complaints and personal values have been questioned among others. Of these respondents, 841 persons or 72% returned this questionnaire. Since the questions on self-rated health, network social capital and social support were included in the drop-off questionnaire, we restrict our analyses to these respondents. The people who did not send the drop-off questionnaire back are more likely to be younger, lower educated, single, retired or unemployed, and to have a lower income. A post-stratification weight factor was created to compensate for the effects of the sample design and non-response to approximate the cross-classification of the census population count within gender, age and education. We estimated the models with and without taking the weight factor into account. Because the results were very similar, only the results of the analyses based on the unweighted sample were presented.

2.2. Measures

2.2.1. Self-rated health

We focus on self-rated health for several reasons. Firstly, this general health outcome is a good first step to explore whether network social capital is associated with health beyond social support. Secondly, research has shown that self-rated health is a strong, independent predictor of mortality (Idler and Benyamini, 1997). Thirdly, several health studies on network social capital have already worked with this health outcome (Song and Lin, 2009; Carpiano and Hystad, 2011; Moore et al., 2011). To assess self-rated health, respondents were asked to rate their own general health condition. There were six response categories: "very poor", "poor", "moderate", "good", "very good" and "excellent". Although the categories of self-rated health can be ranked, the distances between the categories are unknown. Therefore, we treated this variable as ordinal in the presented analyses. Yet, results did not change substantially when we treated self-rated health as continuous or when we dichotomized the variable into high (excellent, very good, and good) and low (moderate, poor, and very poor) categories (results not shown but available upon request).

2.2.2. Network social capital

Network social capital is measured using the position generator (Lin, 2001; Van der Gaag, 2005). In this study, respondents were asked whether they know somebody in their social network having an occupation from a list of 15 occupations. All 15 occupations are salient in Belgian society and range from housemaid/cleaning worker to physician.[i] The response categories were 'An acquaintance has this occupation', 'A friend has this occupation', and 'A family member has this occupation'. For each occupation multiple response categories could be ticked.

We assessed network social capital in two ways. Firstly, we calculated the *volume of social capital* by counting the number of different occupations accessed by the respondents. This measure is most commonly used in position generator studies and is related to the network size (Van der Gaag, 2005). Secondly, we assessed the socio-economic composition of the social network by taking the type of occupations into account. On the one hand, the 15 occupations were assigned occupational prestige values using the Standard Occupational Prestige Scale of Treiman (1977), which range from 22 (housemaid/cleaning worker) to 78 (physician). Using these prestige values, we calculated the *average occupational prestige* of the accessed occupations. Respondents who did not know anyone having one of the fifteen occupations, were assigned a zero-score.[ii] On the other hand, following several position generator experts (Lin and Dumin, 1986; Völker and Flap, 1999; Côté and Erickson, 2009; Verhaeghe et al. 2012), the occupations were divided in different social classes. Using Goldthorpe's (1987) class scheme, we calculated the number of accessed occupations from the skilled, semi-skilled or unskilled manual working class (hereafter called *working class social capital*), from small proprietors, routine non-manual employees and lower-grade professionals and administrators (*intermediate class social capital*), and from large proprietors and higher-grade professionals, administrators and managers (*higher service class social capital*).

Whereas the average-measure is an indicator of the general level of resources embedded in social networks, the class-based measures capture the heterogeneity of network resources and consequently give insight into which kind of network resources are beneficial or detrimental for health. For example, higher service class social capital assesses the involvement of respondents into the 'higher' social circles in society and represents the 'upper reachability' of social networks. Moreover, by using both occupational prestige and social class measures to assess the socio-economic network composition, we address recent calls in epidemiology to distinguish between gradational (occupational prestige) and relational (social classes) perspectives on stratification (Goldthorpe, 2010). To examine the effect of tie strength, we

distinguished between occupations practiced by acquaintances (weak ties) and occupations practiced by friends or family (strong ties).

2.2.3. Social support

Perceived social support is assessed by means of the Medical Outcomes Study (MOS) Social Support scale of Sherbourne and Stewart (1991). The 19 items refer to perceived emotional/informational, tangible, and affectionate support and positive interactions. The response categories range from 'never' (1) to 'always' (5), indicating how often the particular type of support is available to respondents. The items have a high reliability ($\alpha = .96$). The social support scores were calculated by taking the mean of the 19 items, as suggested by Sherbourne and Stewart (1991).[iii]

2.2.4. Covariates

We control for five socio-demographic background variables: gender, age, marital status, social class position and educational attainment. Age was measured in years. Marital status was assessed by distinguishing between the married and cohabited on the one hand and the divorced, widowed, and singles on the other. We counted the number of years of education people have attained. Social class is measured by asking the respondents in detail about their current or last main job. Following the social class scheme of Goldthorpe (1987), we distinguish between working class (skilled, semiskilled, and unskilled manual workers and farm laborers), intermediate class (routine non-manual workers, small proprietors, foremen, technicians, and lower-grade professionals, administrators and officials) and higher service class (managers, large proprietors, and higher-grade professionals, administrators and officials). In addition, we included a category of non-active people (students, house wives/men, chronically ill and retired people).

2.5. Analytic Strategy

Bivariate and multivariate associations between network social capital variables and self-rated health are examined using Ordinal Logit Regression analyses in the statistical software package Stata 10 (Long and Freese, 2001). Ordinal regression assumes that the observed response categories J result from grouping a continuous latent variable Z by J-1 cut points C, where $Z_i=X_i\beta+\varepsilon_i$. The observed Y_i takes value 1 (very poor) if $Z_i<C_1$, value 2 (poor) if $C_1<Z_i< C_2$, and so on, taking value 6 (excellent) if $Z_i>C_5$. The goodness of fit of the analyses is estimated using McKelvey and Zavonia's R^2, which closely approximates the R^2 obtained by estimating linear regression models on underlying latent variables (Long and Freese, 2001).

Our investigation of the extent to which perceived social support is mediating the relationship between network social capital and self-rated health consists of three steps. In step 1, we examine whether the network social capital variables are related to social support (Table 3). To establish a mediation effect, it is necessary that network social capital is associated with social support. In step 2, we look at the associations between network social capital and self-rated health, before and after controlling for social support. We analyze the associations for network social capital that emerges from strong ties (Table 4) and from weak ties (Table 5) separately. A shrinkage of the coefficients of the network social capital variables after taking social support into account, would suggest that social support is mediating the relationship between network social capital and self-rated health. However, when these coefficients remain significant, the mediation would only be partially. In step 3, we formally test this mediation using product of coefficients tests (Table 6). We used first- and second order Taylor series expansions (respectively Sobel and Aroian-tests) to calculate estimates of standard errors of the mediations effects and test-statistics. We followed the formulae and notational conventions outlined by MacKinnon and his colleagues (2002). In all three steps, we analyze the volume of network social capital and the other network social capital measures in different models because of multicollinearity problems.

3. RESULTS

Table 1 reports the descriptive statistics for all variables used in this study. Of the original 841 respondents, data from 26 respondents were dropped from the analyses due to missing information on self-rated health (n=4), network social capital (n=9), perceived social support (n=9), education (n=3) and marital status (n=1). Table 2 reports the occupational prestige scores, social class positions and distribution of the occupations in the position generator. Note that some respondents did not have any family members or friends (n=48) or acquaintances (n=83) in their social network having one of the fifteen position generator occupations.

Table 1 about here

Table 2 about here

Bivariate analyses showed that all network social capital variables are positively associated with self-rated health, except working class social capital from strong ties (results not shown but available upon request). It appears that especially volume of network social capital from strong ties and intermediate class social capital from strong ties are positively associated with self-rated health.

Table 3 shows the results of the regression models of perceived social support on network social capital. We find that people with higher volumes of social capital from strong ties (b=.039; se=.010; p<.001) and weak ties (b=.022; se=.009; p<.01) perceive higher levels of social support. Moreover, people with more friends and relatives from the intermediate class perceive higher levels of social support (b=.117; se=.027; p<.001), whereas people with more acquaintances from that class perceive lower levels of social support (b=-.058; se=.027; p<.01). People with more friends and relatives from the working class perceive lower

levels of social support (b=-.042; se=.025; p<.10), whereas people with more acquaintances from that class perceive more social support (b=.074; se=.023; p<.01).

Table 3 about here

Table 4 presents the results of the regression analyses of self-rated health on network social capital from strong ties and perceived social support. Model 1 shows that people with higher volumes of social capital from strong ties have a higher self-rated health (b=.070; se=.025; p<.01). When we examine the socio-economic composition of the accessed social capital in model 3, we see that having family members and friends from the intermediate class is positively associated with self-rated health (b=.241; se=.064; p<.001). However, having family members and friends from the higher service class does not have a significant effect on self-rated health and having strong ties from the working class has a marginally significant negative effect on self-rated health (b=-.111; se=.061; p=.070). The average occupational prestige of the network members does not have a significant effect on self-rated health. Further analyses revealed that the network social capital effects do not differ according to the social class position of the respondents (results not shown).

Table 4 about here

When we examine the associations between perceived social support and self-rated health in model 2 and 4 of table 4, we see that people with a higher perceived social support report a higher self-rated health (b=.522; se=.087 and b=.496; se=.088 respectively, p<.001). After taking the influence of social support into account, the positive coefficients of volume of social capital from strong ties and intermediate class social capital from strong ties are reduced with respectively 24% ((.070 – .053)/.070) and 18% ((.241 – .197)/.241), but remain significant (respectively p<.05 and p<.001). The negative effect of having family members and friends from the working class on self-rated health is reduced with 14% ((-.111 – -.095)/-

.111) and is no longer significant. Formal mediation tests show that perceived social support partially mediates the association between volume of social capital from strong ties and self-rated health (ab=.02; p<.01) and the association between intermediate class social capital from strong ties and self-rated health (ab=.06; p<.001) (see Table 6). The associations between the other strongly tied social capital measures and self-rated health are not significantly mediated through perceived social support.

Table 4 about here

Table 5 presents the results of the analyses of self-rated health on network social capital from weak ties and perceived social support. Model 1 shows that people with higher volumes of social capital from acquaintances have a higher self-rated health (b=.045; se=.020; p<.05). From model 2, we see that perceived social support is positively associated with self-rated health (b=.530; se=.087; p<.001) and that the positive effect of volume of social capital from weak ties on self-rated is reduced with 24% ((.045 – .034)/.045) and becomes marginally significant (b=.034; se=.021; p=.095). Formal mediation tests show that perceived social support partially mediates the association between volume of social capital from weak ties and self-rated health (ab=.01, p<.05) (see Table 6).

In addition, from model 3 in table 5, we can see that the other network social capital variables do not have significant effects on self-rated health. However, according to the Sobel and Aroian mediation tests, perceived social support partially mediates the association of self-rated health with intermediate class social capital from weak ties (ab=-.03, p<.05) and with working class social capital from weak ties (ab=.01, p<.05). These inconsistent mediation results point to the existence of suppression and/or confounding effects, which have to be distinguished from mediation effects (MacKinnon et al. 2000).

Table 5 about here

Table 6 about here

4. DISCUSSION AND CONCLUSION

Recently, there has been growing interest in the impact of network social capital on health. Although there is evidence for positive associations between network social capital and health outcomes, the precise mechanisms through which network social capital influences health are still unclear. It is argued that, among other mechanisms, social network members contribute to a better health through the provision of social support (Berkman and Glass, 2000). Direct and indirect positive effects of social support on health are already established (Lin and Ensel, 1989; Pearlin, 1989; Ensel and Lin, 1991; Thoits, 1995). Therefore, we examined whether there is an effect of network social capital on health, beyond the social support mechanism, among a representative sample of the Belgian population. Moreover, we examined whether the effects of network social capital differ between strong and weak ties. We used two well-established instruments to measure network social capital (position generator) and perceived social support (MOS social support-scale).

Our results indicate that there is a positive association between network social capital and self-rated health, beyond the influence of well-known determinants of health such as social support (Thoits, 1995), social class (Radcliff, 2005) and education (Mirowsky and Ross, 2003). Having network members in many different occupations (used as an indicator of network social capital) is *positively* related with self-rated health. We also found that network social capital from strong ties is more important for self-rated health than network social capital from weak ties. Lin's (2001) theory of social capital states that weak ties are good for 'instrumental' goals (e.g. getting health information), whereas strong ties are good for 'expressive' goals (e.g. getting a sense of attachment). More specifically, we found that having strong ties from the manual working class is moderately *negatively* associated with self-rated health, while having strong ties from the intermediate class is strongly *positively* associated, and having strong ties from the

higher service class is *not* significantly associated. Our results suggest that social support only partially mediates these associations. Nevertheless, the positive associations between having friends and relatives, especially those from the intermediate class, and self-rated health remain strong when taking the influence of perceived social support into account.

These findings indicate that social connections from different classes provide people with different sets of resources. Apparently, friends and relatives from the working class could offer people fewer health-benefiting resources than those from the intermediate and higher service classes. This social class gradient in network social capital could refer to both material resources (such as providing money for healthy food or transport/access to high-quality health-care) and non-material resources (such as health information and social norms about health) (Berkman and Glass, 2000; Kawachi and Berkman, 2001).

Moreover, our results suggest that resources of network members from the working class are rather detrimental for self-rated health, even after taking the own socio-economic position into account. This negative impact of working class social capital would corroborate with the idea of Portes (1998) that social capital might have negative consequences too, for example through influencing norms about health and health behaviors downwardly. Nevertheless, further research has to elaborate these negative health-effects of working class social capital. However, it is important to emphasize that these negative health-consequences are not the result of having friends and relatives from the working class *per se*, but rather because these friends and relatives have less access to resources. Therefore, from a health-promoting perspective, policy makers should deal with the root causes of socio-economic disadvantages in society (cf. Phelan et al. 2010).

Furthermore, because most people who have strong ties from the intermediate class also have strong ties from the higher service class, having extra higher service class ties might not be translated in additional health-benefits.[iv] This could explain the insignificant effect of having strong ties from the higher service

class, after taking the other covariates into account. These results corroborate with the finding that the deepest social class cleavage in life chances is between the working class on the one hand and the intermediate and service classes on the other (Goldthorpe, 1987).

Our findings should, however, be viewed within the confines of the used data and measures. Firstly, because of the cross-sectional design we have to be cautious about the causality of the association. It is possible that people with bad health invest less in their social network (selection bias) or underestimate their network social capital (perception bias). Moreover, mediation analyses with cross-sectional data must be considered with caution. Secondly, we did not include the effects of providing social support to network members. The association between network social capital and self-rated health could be spurious because both are linked to the provision of social support to network members. According to Bourdieu (1986) and Lin (2001), social capital is the result of investment in social relationships. The provision of social support to network members could be considered as an investment, resulting in higher levels of network social capital. Moreover, the provision of social support enhances the helper's self-efficacy and consequently his/her well-being too (Bracke et al., 2008). Further research should take into account perceived social support together with the reciprocity of the support exchange.

Nevertheless, within the confines of these limitations, this study extends previous research in several ways. It contributes to recent research about the relevance of the social network structure for health (Smith and Christakis, 2008) by paying attention to the resources embedded in social networks. Especially the social class composition of the social network appears to matter for health. Moreover, this study addresses theoretical critiques on the relevance of network social capital for health (McKenzie et al., 2002; Kawachi et al., 2004) by showing with two well-established measurement instruments that the impact of network social capital on health goes beyond the influence of social support. It suggests that network social capital is more than 'pouring old wine in new bottles'.

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[i] Since two of the fifteen position generator items are health-related (nurse and physician), we conducted a sensitivity study by examining the associations between network social capital and self-rated health without these two items. The results of these analyses did not change substantially from these reported in the paper (tables available upon request).

[ii] We conducted a sensitivity analysis by assigning these respondents the average occupational prestige scores of the other respondents (mean imputation) instead of attributing to them a score of zero. The results of these analyses did not change substantially from these reported in the paper (tables available upon request).

[iii] We conducted further analyses with 4 subscales of the MOS-scale: 'Tangible support', 'Affectionate support', Positive social interaction', and 'Emotional/informational support'. The coefficients of these subscales were not substantially different from the coefficients of the overall support index reported in this study (tables available upon request).

[iv] Among our sample, we found a moderately strong correlation (r = .507) between having strong ties from the intermediate class and having strong ties from the higher service class.

The association between network social capital and self-rated health: Pouring old wine in new bottles?

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TABLE 1. Descriptive statistics of the sample (N=815)

Continuous variables: means and standard deviations		
	Mean	**S.D.**
Network social capital measures		
Volume of social capital from strong ties	4.88	2.87
Volume of social capital from weak ties	4.68	3.39
Working class social capital from strong ties	1.38	1.26
Working class social capital from weak ties	1.63	1.42
Intermediate class social capital from strong ties	2.22	1.37
Intermediate class social capital from weak ties	1.54	1.36
Higher service class social capital from strong ties	1.28	1.32
Higher service class social capital from weak ties	1.51	1.4
Average occupational prestige score of strong ties	47.29	14.62
Average occupational prestige score of weak ties	46.11	17.92
Perceived social support	4.1	0.83
Age	49.57	17.74
Years of education	12.75	3.69
Categorical variables: numbers and percentages		
	N	**%**
Self-Rated Health		
Very bad	5	0.6
Bad	21	2.6
Fair	112	13.7
Good	347	42.6
Very good	258	31.7
Excellent	72	8.8
Social Class Position		
Working class (referent)	202	24.8
Intermediate class	391	48.0
Higher Service class	127	15.6
Non-active	95	11.7
Gender		
Male (referent)	389	47.7
Female	426	52.3
Marital status		
Other (referent)	552	67.7
Married/cohabited	263	32.3

TABLE 2. Occupational Prestige Scores, Social Class Positions and Distribution of the Occupations in the Position Generator (N=815)

Occupation	Occupational Prestige Score	Social Class Position	% Known through Strong Ties	% Known through Weak Ties
Housemaid, cleaning worker	22	Working class	34.1	38.9
Assembly line worker	30	Working class	22.2	21.5
Truck driver	33	Working class	24.5	32.1
Policeman/women	40	Working class	22.3	36.6
Electrician	44	Working class	34.4	34.0
Clerical worker	41	Intermediate class	62.1	37.5
Owner of small factory/firm	52	Intermediate class	40.1	30.2
Nurse	54	Intermediate class	51.5	39.4
Journalist	55	Intermediate class	11.0	14.4
Teacher	61	Intermediate class	57.3	32.9
Division head	60	Higher service class	30.8	26.9
Manager of large factory/firm	63	Higher service class	28.2	23.8
Owner of large factory/firm	70	Higher service class	19.3	26.7
Lawyer	73	Higher service class	21.5	30.8
Physician	78	Higher service class	28.6	42.6

TABLE 3. Linear Regression of Perceived Social Support on Network Social Capital (Standard Errors between Parentheses) (N=815)

	Model 1	Model 2	Model 3	Model 4
Gender (ref. male)	-.070	-.074	-.080	-.073
	(.058)	(.058)	(.058)	(.058)
Age	-.004*	-.005*	-.005**	-.005**
	(.002)	(.002)	(.002)	(.002)
Social class position (ref. working class)				
Intermediate class	.155*	.107	.155*	.154*
	(.076)	(.076)	(.076)	(.076)
Higher service class	.257*	.211*	.243*	.250*
	(.10)*	(.107)	(.106)	(.106)
Non-active	.407***	.349***	.404***	.412***
	(.108)	(.109)	(.108)	(.108)
Years of education	.012	.005	.015	.015
	(.009)	(.010)	(.009)	(.009)
Marital status (ref. other)	.375***	.374***	.391***	.380***
	(.064)	(.063)	(.064)	(.064)
Network social capital				

Volume of social capital from strong ties	.039***			
	(.010)			
Higher service class social capital from strong ties		.033		
		(.026)		
Intermediate class social capital from strong ties		.117***		
		(.027)		
Working class social capital from strong ties		-.042+		
		(.025)		
Average occupational prestige score of strong ties		-.003		
		(.002)		
Volume of social capital from weak ties			.022**	
			(.009)	
Higher service class social capital from weak ties				.048+
				(.027)
Intermediate class social capital from weak ties				-.058*
				(.027)
Working class social capital from weak ties				.074**
				(.023)
Average occupational prestige score of weak ties				.001
				(.002)
Intercept	3.567***	3.810***	3.680***	3.623***
	(.177)	(.206)	(.172)	(.186)
R^2	10.5%	12.1%	9.7%	10.9%

+ p<.10, * p<.05, ** p<.01, *** p<.001

TABLE 4. Ordinal Logit Regression of Subjective Health on Network Social Capital from Strong Ties and Perceived Social Support (Standard Errors between Parentheses) (N=815)

	Model 1	**Model 2**	**Model 3**	**Model 4**
Gender (ref. male)	-.275*	-.247+	-.284*	-.257+
	(.138)	(.138)	(.138)	(.139)
Age	-.027***	-.026***	-.029***	-.028***
	(.004)	(.004)	(.004)	(.004)
Social class position (ref. working class)				
Intermediate class	.332+	.250	.237	.178
	(.182)	(.183)	(.185)	(.186)
Higher service class	.457+	.329	.357	.260
	(.248)	(.249)	(.253)	(.253)
Non-active	.628**	.465+	.521*	.393
	(.254)	(.257)	(.259)	(.260)
Years of education	.054*	.048*	.040+	.039
	(.022)	(.022)	(.024)	(.023)
Married/cohabited (ref. other)	.025	-.147	.026	-.138
	(.152)	(.155)	(.151)	(.155)

Network social capital				
Volume of social capital from strong ties	.070**	.053*		
	(.025)	(.025)		
Higher service class social capital from strong ties			.091	.074
			(.091)	(.064)
Intermediate class social capital from strong ties			.241***	.197***
			(.064)	(.065)
Working class social capital from strong ties			-.111+	-.095
			(.061)	(.061)
Average occupational prestige score of strong ties			-.011	-.010
			(.009)	(.009)
Perceived social support		.522***		.496***
		(.087)		(.088)
C1	-5.489***	-3.733***	-6.222***	-4.449***
	(.612)	(.672)	(.668)	(.730)
C2	-3.805***	-2.030***	-4.536***	-2.745***
	(.461)	(.541)	(.534)	(.613)
C3	-1.913***	-.086	-2.635***	-.796
	(.427)	(.521)	(.502)	(.593)
C4	.303	2.206***	-.397	1.512*
	(.422)	(.528)	(.494)	(.596)
C5	2.426***	4.372***	1.749***	3.696***
	(.432)	(.542)	(.500)	(.606)
-2 Log Likelihood	-1031.302	-1013.05	-1024.759	-1008.477
McKelvey and Zavonia's R^2	14.5%	18.8%	16.0%	19.8%

+ p<.10, * p<.05, ** p<.01, *** p<.001

TABLE 5. Ordinal Logit Regression of Subjective Health on Network Social Capital from Weak Ties and Perceived Social Support (Standard Errors between Parentheses) (N=815)

	Model 1	**Model 2**	**Model 3**	**Model 4**
Gender (ref. male)	-.292*	-.259+	-.292*	-.262+
	(.137)	(.138)	(.137)	(.138)
Age	-.029***	-.027***	-.029***	-.027***
	(.004)	(.004)	(.004)	(.004)
Social class position (ref. working class)				
Intermediate class	.321+	.242	.318+	.240
	(.183)	(.184)	(.183)	(.184)
Higher service class	.431+	.307	.426+	.299
	(.249)	(.249)	(.249)	(.250)
Non-active	.619*	.455+	.614*	.447+
	(.254)	(.257)	(.255)	(.257)
Years of education	.057*	.051*	.056*	.050*
	(.022)	(.022)	(.023)	(.022)

Married/cohabited (ref. other)	.051	-.130	.048	-.129
	(.151)	(.154)	(.151)	(.155)
Network social capital				
Volume of social capital from weak ties	.045*	.034		
	(.020)	(.021)		
Higher service class social capital from weak ties			.075	.045
			(.063)	(.064)
Intermediate class social capital from weak ties			.012	.046
			(.062)	(.063)
Working class social capital from weak ties			.044	.007
			(.055)	(.055)
Average occupational prestige score of weak ties			.001	.001
			(.004)	(.004)
Perceived social support		.530***		.533***
		(.087)		(.088)
C1	-5.672***	-3.835***	-5.637***	-3.825***
	(.604)	(.668)	(.627)	(.687)
C2	-3.987***	-2.13***	-3.952***	-2.120***
	(.451)	(.537)	(.482)	(.562)
C3	-2.095***	-.187	-2.060***	-.177
	(.415)	(.516)	(.450)	(.542)
C4	.116	2.103***	.153	2.114***
	(.408)	(.522)	(.444)	(.549)
C5	2.232***	4.264***	2.270***	4.276***
	(.418)	(.536)	(.452)	(.561)
-2 Log Likelihood	-1032.733	-1013.839	-1032.456	-1013.666
McKelvey and Zavonia's R^2	14.2%	18.6%	14.3%	18.6%

+ p<.10, * p<.05, ** p<.01, *** p<.001

TABLE 6. Formal Mediation Tests of Perceived Social Support between Network Social Capital and Self-Rated Health (N=815)

						Sobel Test		**Aroia**
Network Social Capital Variables	a[a]	SE(a)	b[b]	SE(b)	ab[c]	SE(ab)	Test Statistic	SE(ab)
Volume of social capital from strong ties	0.04	0.01	0.52	0.09	0.02	0.01	3.15	0.01
Higher service class social capital from strong ties	0.03	0.03	0.50	0.09	0.02	0.01	1.23	0.01
Intermediate class social capital from strong ties	0.12	0.03	0.50	0.09	0.06	0.02	3.48	0.02
Working class social capital from strong ties	-0.04	0.03	0.50	0.09	-0.02	0.01	-1.59	0.01
Average occupational prestige score of strong ties	0.00	0.00	0.50	0.09	0.00	0.00	-1.12	0.00
Volume of social capital from weak ties	0.02	0.01	0.53	0.09	0.01	0.00	2.42	0.00
Higher service class social capital from weak ties	0.05	0.03	0.53	0.09	0.03	0.01	1.70	0.02

Intermediate class social capital from weak ties	-0.06	0.03	0.53	0.09	-0.03	0.02	-2.05	0.02
Working class social capital from weak ties	0.07	0.02	0.53	0.09	0.04	0.01	2.85	0.01
Average occupational prestige score of weak ties	0.00	0.00	0.53	0.09	0.00	0.00	0.46	0.00

[a] a is the coefficient representing the estimated association between network social capital and perceived social support

[b] b is the coefficient representing the estimated association between perceived social support and self-rated health

[c] ab is an estimate of the mediated effect (please consult MacKinnon et al. 2002 for more information)

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Research highlights

- We examine associations between network social capital and self-rated health, after controlling for perceived social support
- Network social capital is measured with the position generator
- Network social capital cannot be equated with social support
- Social capital from higher classes is beneficial for health
- Working class social capital is rather detrimental for health